The Maze Procedure and Left Atrial Enlargement: *Just Do It*

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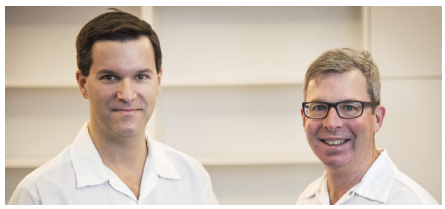

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Central Message

Surgical ablation is effective in most patients with left atrial enlargement and should be included if the left atrial dimension is less than 75 mm. The biatrial Cox maze IV is the preferred lesion set.

Surgeons know that untreated atrial fibrillation (AF) leaves their patients at increased risks for stroke, anticoagulant-related hemorrhage and death.[1] There is also compelling evidence confirming that surgical ablation of AF (ie, the Cox maze procedure) increases the likelihood of return to sinus rhythm (AF) and is associated with improved short- and long-term outcomes.[1,2] Nevertheless, surgeons frequently find reasons to omit surgical ablation and, instead, satisfy themselves (and undertreat their patients) by addressing only the primary indication for heart surgery. Most of the excuses for omitting ablation have been refuted by data demonstrating that the Cox maze procedure is both safe and effective.[1–4] In this issue of *Seminars in Thoracic and Cardiovascular Surgery*, Wang et al address one of the few remaining reasons for withholding ablation: the notion that ablation will not work in patients with left atrial enlargement.[5]

Multiple studies demonstrate that increased left atrial size constitutes a risk factor for failure of surgical ablation.[2–4,6,7] While some centers advocate atrial reduction at the time of ablation in those with substantial left atrial enlargement,[8] others simply omit ablation if the left atrial dimension exceeds some arbitrary dimension. Wang et al provide data suggesting that ablation should be performed regardless of left atrial size.

In their study, Wang et al report 82% freedom from AF off antiarrhythmic medications in patients with a left atrial dimension ≥65 mm at 2 years' follow-up; however, results were not as good in the small number of patients with LA dimension ≥75 mm. After ablation, the majority of patients had evidence of left and right atrial contraction. These results did not differ substantially from those observed in patients with smaller left atria. Complications in both groups (those with and without left atrial enlargement) were few. Thus, the authors conclude that ablation should be applied in those with large left atria as the results are good.

But, there is a catch—the surgical procedure that the authors performed will not be appealing to most surgeons. The authors performed a cut-and-sew ablation procedure that included a somewhat unconventional lesion set. First, the cut-and-sew piece. After its introduction, the cut-and-sew maze was adopted by very few surgeons; the complexity and time requirements were responsible for this low adoption rate. In fact, in Wang's series, the average cardiopulmonary bypass time approached 3 hours in patients undergoing mitral valve surgery. Although surgical results were good, this is a relatively long period on cardiopulmonary bypass, and it is likely that some patients would not fare well with such a long pump run. Today, surgeons employ alternate energy sources—cryothermy and bipolar radiofrequency—to complete their lesion sets. These tools reduce the risk of bleeding and speed up the procedure. In addition, when these ablation devices are properly employed, surgical results are excellent.[3,4] The cut-and-sew approach to surgical ablation is obsolete.

Standardization of lesion sets has long been a challenge in our field. It seems that every surgeon has his or her own version of the maze procedure.[9] The authors performed an ablation procedure that is similar—but not identical—to the Cox maze III/IV. Most notably, they added a right atrial isthmus lesion in many patients in order to reduce the occurrence of right atrial flutter. The standard right atrial lesions of the Cox maze III/IV reach the tricuspid annulus, rendering the addition of a right atrial isthmus lesion both unnecessary and inadvisable. At this point in our understanding of the surgical ablation of AF, surgeons should stick to the biatrial lesion set of the Cox maze III/IV. Until and unless we have additional data that provide a firm rationale for varying the lesion set, we should employ this standard operation that generates good results.

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DOI of original article: http://dx.doi.org/10.1053/j.semtcvs.2019.05.004.

1043-0679/$–see front matter

https://doi.org/10.1053/j.semtcvs.2019.06.008

The central message of this paper—surgical ablation is safe and effective in those with left atrial enlargement—should encourage surgeons to perform the Cox maze IV procedure in such patients. With alternate energy sources, the procedure will add no more than 30 minutes to the cardiopulmonary bypass time, and its application should free a substantial number of patients from the risks that accompany AF.

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